CLAIMS:

We Claim:

1. A method for controlling output of a classification algorithm which classifies an occupant of a seat in a vehicle, comprising the steps of:

initially classifying the occupant and outputting a current classification;

subsequently periodically re-classifying the occupant; and

enabling a change in the classification of the occupant only upon obtaining evidence of a new classification which is greater than evidence of the current classification.

2. The method of claim 1, wherein the step of enabling a change in the classification of the occupant comprises the steps of:

determining a consecutive period of time that the re-classification of the occupant is the same as the current classification;

detecting a change in classification and then determining a consecutive period of time that the re-classification of the occupant is the changed classification; and

when the period of time in which the classification is the changed classification is greater than the period of time when the classification is the output classification, or greater than a predetermined time period, outputting the changed classification.

3. The method of claim 2, wherein the step of enabling a change in the classification of the occupant further comprises the steps of:

determining whether the period of time that the re-classification of the occupant is the same as the current classification is greater than a pre-determined time threshold and if so,

setting the period of time that the classification of the occupant is the same as the current classification to the pre-determined threshold.

4. The method of claim 1, further comprising the step of conducting the initial classification of the occupant based on satisfaction of a condition.

5. The method of claim 1, further comprising the step of conducting the initial classification of the occupant based on detection of closure of a door.

6. The method of claim 1, further comprising the steps of:

providing a sensor to detect closure of the door; and

conducting the initial classification of the occupant upon detection of closure of the door.

7. The method of claim 6, wherein the sensor is a door closure sensor.

8. The method of claim 1, further comprising the steps of:

detecting an empty seat; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of an empty seat.

9. The method of claim 1, further comprising the steps of:

providing a sensor to detect an empty seat; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of an empty seat by the sensor.

10. The method of claim 1, further comprising the steps of:

detecting switching on of the vehicle ignition; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of the switching on of the vehicle ignition.

11. The method of claim 1, further comprising the steps of:

providing a sensor to detect switching on of the vehicle ignition; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of the switching on of the vehicle ignition by the sensor.

12. The method of claim 1, wherein the classification of the occupant is performed using a trained neural network.

13. The method of claim 1, wherein the classification of the occupant is performed using a combination neural network.

14. The method of claim 1, wherein the classification of the occupant is performed using a modular neural network.

15. The method of claim 1, further comprising the step of obtaining data from sensors such that the classification of the occupant is performed using the data obtained from the sensors.

16. The method of claim 15, wherein the sensors are selected from a group consisting of a weight sensor, a capacitance-based sensor, an electric field-based sensor, a radar or other electromagnetic wave-based sensor, a camera-based sensors including a 3D sensor, and an ultrasonic-based sensor.

17. The method of claim 1, further comprising the step of obtaining data from at least one camera such that the classification of the occupant is performed using the data obtained from the at least one camera.

18. The method of claim 1, further comprising the step of:

resetting the classification upon detection of a condition selected from a group consisting of an empty seat, opening of a door, ignition of the vehicle, motion of the vehicle and absence of motion of the vehicle; and then

upon resetting of the classification, classifying the occupant and outputting the classification.

19. A method for controlling output of a classification algorithm which classifies an occupant of a seat, comprising the steps of:

initially classifying the occupant and outputting a current classification;

subsequently periodically re-classifying the occupant;

determining a consecutive period of time when the re-classification of the occupant is unchanged and different from the current classification; and

enabling a change in the classification of the occupant only upon when the consecutive period of time is greater than a threshold and then outputting the changed classification.

20. The method of claim 19, further comprising the step of conducting the initial classification of the occupant based on satisfaction of a condition.

21. The method of claim 19, further comprising the steps of:

detecting an empty seat; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of an empty seat.

22. The method of claim 19, further comprising the steps of:

detecting switching on of the vehicle ignition; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of the switching on of the vehicle ignition.

23. The method of claim 19, wherein the classification of the occupant is performed using a trained neural network, a combination neural network or a modular neural network.

24. The method of claim 19, further comprising the step of obtaining data from sensors such that the classification of the occupant is performed using the data obtained from the sensors.

25. The method of claim 19, further comprising the step of:

resetting the classification upon detection of a condition selected from a group consisting of an empty seat, opening of a door, ignition of the vehicle, motion of the vehicle and absence of motion of the vehicle; and then

upon resetting of the classification classifying the occupant and outputting the classification.

26. A method for controlling output of a classification algorithm which classifies an occupant of a seat in a vehicle, comprising the steps of:

initially classifying the occupant and outputting a current classification;

subsequently periodically re-classifying the occupant; and

enabling a change in the classification of the occupant upon satisfying pre-determined criteria;

resetting the classification upon detection of a condition selected from a group consisting of an empty seat, opening of a door, ignition of the vehicle, motion of the vehicle and absence of motion of the vehicle; and then

upon resetting of the classification, classifying the occupant and outputting the classification.

27. The method of claim 26, wherein the step of enabling a change in the classification of the occupant comprises the steps of:

determining a consecutive period of time that the re-classification of the occupant is the same as the current classification;

detecting a change in classification and then determining a consecutive period of time that the re-classification of the occupant is the changed classification; and

when the period of time in which the classification is the changed classification is greater than the period of time when the classification is the output classification, or greater than a predetermined time period, outputting the changed classification.

28. The method of claim 27, wherein the step of enabling a change in the classification of the occupant further comprises the steps of:

determining whether the period of time that the re-classification of the occupant is the same as the current classification is greater than a pre-determined time threshold and if so,

setting the period of time that the classification of the occupant is the same as the current classification to the pre-determined threshold.

29. The method of claim 26, further comprising the step of conducting the initial classification of the occupant based on satisfaction of a condition.

30. The method of claim 26, further comprising the steps of:

detecting an empty seat; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of an empty seat.

31. The method of claim 26, further comprising the steps of:

detecting switching on of the vehicle ignition; and

conducting the initial classification of the occupant upon detection of an object in the seat after detection of the switching on of the vehicle ignition.

32. The method of claim 26, wherein the classification of the occupant is performed using a trained neural network, a combination neural network or a modular neural network.

33. The method of claim 26, further comprising the step of obtaining data from sensors such that the classification of the occupant is performed using the data obtained from the sensors.

34. The method of claim 26, wherein the condition is an empty seat, further comprising the step of:

detecting the empty seat by means of a weight sensor arranged in connection with the seat.

35. The method of claim 26, wherein the condition is an empty seat, further comprising the step of:

detecting the empty seat by means of an electric field sensor.

36. The method of claim 26, wherein the condition is an empty seat, further comprising the step of:

detecting the empty seat by means of a wave-receiving sensor.

37. A method for controlling output of a classification algorithm which classifies an occupant of a seat, comprising the steps of:

setting the output classification to an empty seat;

subsequently classifying any occupant of the seat;

determining whether the classification is other than an empty seat and if not, periodically repeating the step;

otherwise, when the classification is other than an empty seat, repeating the classification step;

if the repeated classification step provides a classification of an empty seat, setting the output classification to an empty seat;

if the repeated classification step provides a stable classification, then setting the output classification to the stable classification;

repeating the classification step; and

changing the classification only when the repeated classification step provides a classification of an empty seat in which case, the classifications changed to an empty seat.

38. The method of claim 37, wherein the repeated classification steps provides a stable classification when the classification is the same for a pre-determined period of time.

39. The method of claim 37, wherein the classification of the occupant is performed using a trained neural network.

40. The method of claim 37, further comprising the step of obtaining data from sensors such that the classification of the occupant is performed using the data obtained from the sensors.

41. The method of claim 40, wherein the sensors are selected from a group consisting of a weight sensor, a capacitance-based sensor, an electric field-based sensor, a radar or other electromagnetic wave-based sensor, a camera-based sensors including a 3D sensor, and an ultrasonic-based sensor.

42. The method of claim 37, further comprising the step of obtaining data from at least one camera such that the classification of the occupant is performed using the data obtained from the at least one camera.

43. The method of claim 37, wherein the classification of the occupant is performed using a trained neural network, a combination neural network or a modular neural network.

44. A method for controlling classification of an occupant of a seat, comprising the steps of:

providing an empty-seat state in which a stored classification is set to an empty seat;

subsequently classifying occupancy of the seat and when the classification is other than an empty seat, exiting the empty-seat state and setting the algorithm in a transition state and storing the non-empty seat classification;

periodically reclassifying occupancy of the seat and changing the stored classification to the re-classified occupancy when the re-classified occupancy is different than the stored classification;

determining whether the stored classification satisfies a first condition and if so, exiting the transition state and setting the algorithm in a revoking state;

determining whether the stored classification satisfies a second condition different than the first condition and if so, exiting the revoking state and setting the algorithm in a classified state; and

when the algorithm is in the classified state, outputting the stored classification.

45. The method of claim 44, further comprising the steps of:

when the algorithm is in the classified state, re-classifying the occupancy of the seat; and

preventing change in the stored classification.

46. The method of claim 44, further comprising the steps of:

when the algorithm is in the classified state, re-classifying the occupancy of the seat; and

allowing a change in the stored classification only if the re-classified occupancy satisfies a third condition.

47. The method of claim 46, wherein the third condition is a time-based condition more onerous that the second condition and the second condition is a time-based condition more onerous than the first condition.